

## HLA-B27 Screening by Flow-Cytometry

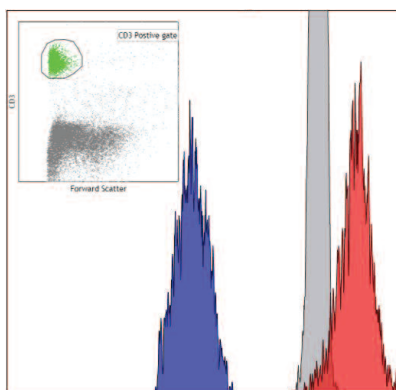
**A**CM Global has recently added to their in-house testing repertoire with addition of HLA-B27 screening by flow-cytometry. As little is known about HLA-B27, we'd like to provide a brief background, and the significance of this testing.

The Human Leucocyte Antigen (HLA) is the name of the Major Histocompatibility Complex (MHC) in humans. HLAs are expressed on the surface of most cells and are essentially unique to that individual. HLAs are used by the immune system to differentiate self and non-self cells. HLAs are also used by the immune system when compromised. Antigen presenting cells are able to engulf invading cells and present proteins from the pathogen on their cell surface associated with the HLA protein (specifically HLA class II) where they can be recognised and trigger response from T cells. Other cells, when invaded by a virus for example, can present viral proteins on their cell surface also associated with the HLA protein (specifically Class I) in order to trigger targeted response from cells such as cytotoxic T cells.

On a negative note HLAs are responsibility for organ and graft rejection following transplantation when non-self HLAs are identified on the transplanted tissue. As such HLA typing is among the most frequently typed loci by either PCR or serology. It has also been noted that a number of HLA types appear at a higher frequency in populations suffering from autoimmune conditions, one such type is HLA-B27. HLA-B27 is a subtype of Class I HLAs and is responsible for presenting antigens to T cells. The HLA-B27 sub-type occurs in the general population with a frequency of about 8% in Caucasians, 4% in Africans, 2-9% in Chinese, 0.1-0.5% in Japanese and in Northern Scandinavia (Lapland) 24% of people are HLA-B27 positive.

The HLA-B27 subtype is strongly associated with a certain set of autoimmune conditions referred to as "Seronegative spondyloarthropathies". The relationship between different diseases and HLA-B27 is yet to be fully understood. For example 90% of people with ankylosing spondylitis (AS) are positive for HLA-B27, but only a small percentage of people with HLA-B27 ever develop AS. Although this connection has been know for more than 35 years the pathogenic mechanism linking the two remains a mystery. Opinions are split as to why this inherited trait should be conserved considering the negative pathologies associated with it, however, a common opinion is that HLA-B27 is a highly efficient antigen presenting molecule for viral proteins and confers some protection to the influenza A virus. As well as its association with AS, HLA-B27 has been seen with greater frequency in people with reactive arthritis, certain eye disorders such as acute anterior uveitis and iritis, psoriatic arthritis, and ulcerative colitis.

ACM Global is performing this test using the BD Bioscience HLA-B27 kit. This is a qualitative two-colour direct immunofluorescence method for the rapid detection of HLA-B27 expression. Validation of the kit has been performed with the help of NEQAS and other certified testing centres who kindly provided samples on which we could evaluate our testing performance. The validation was successful and we are now signed up to the CAP HLA-B27 proficiency scheme and ready to test our first patient samples.



- An example of the difference seen between a sample negative for HLA-B27 (blue) and a sample positive for HLA-B27 expression (red) versus the BD setup beads used to define the positive cut-off threshold (grey).